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| 10/698,622 | 10/31/2003 | Andrey L. Balmin | ARC920030042US1 | 3369 |

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MARC D. MCSWAIN
IBM CORPORATION, INTELLECTUAL PROPERTY LAW
DEPT. C4TA/J2B
650 HARRY ROAD
San Jose, CA 95120-6099

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| EXAMINER |
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PONKIEWSKI, TOMASZ

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| ART UNIT | PAPER NUMBER |
| 2165 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 01/24/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/698,622 | BALMIN ET AL. | |
| | Examiner | Art Unit | |
| | Tomasz Ponikiewski | 2165 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Amendment filed on November 8, 2006 has been received and entered.

Claims 1-64 are pending.

2. Applicant's amendment has overcome previous rejection under 112 2nd.

Claim Objections

3. Claims 1, 10, 13, 16, 22, 31, 34, 37, 43, 52, 55, 58 and 64 are objected to because of the following informalities:

Claims 1, 10, 13, 16, 22, 31, 34, 37, 43, 52, 55, and 58 recite the word "for" in the body of the claims. It indicates intended use and as such does not carry patentable weight. The word could be changed to recite "to". The limitations following the phrase "for" describes only intended use but not necessarily required functionality of the claim. Limitations following the phrase "for" do not carry patentable weight, which cause the claims to appear as a series of non-functional descriptive material/data without any functional relation with each other. Applicant is required to amend the claims so that the claim limitations are recited in a definite form.

Claims 1, 22 and 43 recite limitation "can be" in lines 7 and 8 of the claim. The recitation makes the claim limitation optional.

Claim Rejections - 35 USC § 101

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4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1, 22, and 43 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1, 22, and 43 do not list any hardware (i.e. computer) tied to the steps in the body of the claims in order to operate the steps of the claims therefore resulting in software only implementation.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 22, and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 22, and 43 recite computation for "index selection or materialized view" yet the end of the limitation states that the determination is based on "said index". The materialized view is ignored in the recitation therefore is not needed in the "or" statement.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-64 are rejected under 35 U.S.C. 103(a) as being obvious over Barton et al. (US 2004/0068487) in view of Yalamanchi et al. (US 2003/0212670 A1).

The Barton et al. reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

As per claims 1, 22, and 43 Barton et al. is directed to a computer-implemented method, system and product for querying a structured document, comprising:

identifying auxiliary structures including pre-computed information applicable to accelerate user query processing by detecting containment mappings between query expressions and expressions in the auxiliary structures (page 1, paragraph 0002 lines 6-8; wherein "mappings" could be "elements"; page 1, paragraph 0015, line 4);

finding the user query result by executing a rewritten query that exploits the pre-computed information for each detected containment mapping (page 1, paragraph 0015, lines 2-4).

Barton et al. does not teach computing compensation for index selection or materialized view matching to determine what portion of said query expressions can be evaluated by said index.

Yalamanchi et al. teaches computing compensation for index selection or materialized view matching to determine what portion of said query expressions can be evaluated by said index (Yalamanchi et al., paragraph 0054).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Barton et al. as modified by teachings of Yalamanchi et al. to include computing compensation for index selection or materialized view matching to determine what portion of said query expressions can be evaluated by said index because it helps increase efficiency and speed of evaluation of query (Yalamanchi et al., paragraph 0054, lines 4-7).

As per claim 2, 23, and 44 Barton et al. as modified is directed to comprising implementing the method in a relational database management system (page 6, paragraph 0103, line 2)

As per claim 3, 24, and 45 Barton et al. as modified is directed to the structured document includes a set of nodes described by an expression tree (page 3, paragraph (page 3, paragraph 0040, lines 7-8).

As per claim 4, 25, and 46 Barton et al. as modified is directed to the structured document is an XML document (abstract, line 2).

As per claim 5, 26, and 47 Barton et al. as modified is directed to the auxiliary structures include a number of indexes, a number of partial XML indexes, and a number of materialized views (page 1, paragraph 0002 lines 6-8; wherein "index" could mean "tag"; page 4, paragraph 0076, lines 1-3).

As per claim 6, 27, and 48 Barton et al. as modified is directed to the pre-computed information includes pre-computed XPath results (PXR's) (page 1, paragraph 0012, lines 10-12, wherein "pre-computed XPath results" could mean "XPath expressions"; page 1, paragraph 0015, lines 2-4).

As per claim 7, 28, and 49 Barton et al. as modified is directed to the user query processing further comprises navigating path expressions with a query language (page 1, paragraph 0003).

As per claim 8, 29, and 50 Barton et al. as modified is directed to the query language employs Xpath (page 1, paragraph 0012, lines 1-3)

As per claim 9, 30, and 51 Barton et al. as modified is directed to the query language includes at least one of: XQuery, SQL/XML, and XSLT (page 1, paragraph, 0012, lines 2-3).

As per claim 10, 31, and 52 Barton et al. as modified is directed to the detecting further comprises:

selectively executing a set of predetermined sequential rules for traversing a tree of nodes (page 2, paragraph 0019, lines 13-17);

matching node data with the pre-computed information (page 3, paragraph 0057, lines 2-3);

and selecting auxiliary structures that subsume portions of the user query (pages 3-4, paragraph 0058).

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As per claim 11, 32, and 53 Barton et al. as modified is directed to the node data includes axis data, test data, predicate data, and next step node data (page 2, paragraph 0019, lines 5-7; page 4, paragraph, 0065, lines 13-23).

As per claim 12, 33, and 54 Barton et al. as modified is directed to comprising normalizing expression trees by moving predicate conditions into filter expressions before the identifying (page 4, paragraph 0076, lines 6-9).

As per claim 13, 34, and 55 Barton et al. as modified is directed to executing the rewritten query further comprises:

constructing a pushdown expression for evaluation with information in the auxiliary structure (page 5, paragraph 0080, lines 4-8);

constructing a compensation expression for evaluation as a residual query, wherein said residual query comprises at least portion of said query with said index or said materialized view (Yalamanchi et al., paragraph 0102).

As per claim 14, 35, and 56 Barton et al. as modified is directed to the compensation expression is an XPath predicate (page 1, paragraph 0015, lines 2-4).

As per claim 15, 36, and 57 Barton et al. as modified is directed to comprising building a taxonomy of auxiliary structures (page 3, paragraph 0043, lines 1-3, wherein "taxonomy" could mean "labels").

As per claim 16, 37, and 58 Barton et al. as modified is directed to comprising classifying compensation expressions for the taxonomy according to a predetermined set of values (page 3, paragraph 0043, lines 6-7; wherein "set of values" could mean "set of constraints").

As per claim 17, 38, and 59 Barton et al. as modified is directed to the identifying handles at least one of: nested path expressions, nested predicates, value-based comparison predicates, conjunction, disjunction, all XPath axes, branches, and wild cards (page 3, paragraph 0040, lines 3-5, wherein "branches" or "XPath axes" could mean "labels").

As per claim 18, 39, and 60 Barton et al. as modified is directed to the XPath axes include child, descendant, self, attribute, parent, and descendant-or-self (page 2, paragraph, 0020, lines 7-11).

As per claim 19, 40, and 61 Barton et al. as modified is directed to comprising creating a mapping directed acyclic graph (DAG) that separately encodes a set of all containment mappings for each node (page 3, paragraph, 0039).

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As per claim 20, 41, and 62 Barton et al. as modified is directed to creating the mapping DAG is polynomial in terms of a size of expression trees (page 6, paragraph 0104).

As per claim 21, 42, and 63 Barton et al. as modified is directed to comprising pruning the mapping DAG to remove invalid node pairs (page 5, paragraph 0090, lines 1-3).

As per claim 64 Barton et al. is directed to a system for querying a structured document, comprising:

means for identifying auxiliary structures including pre-computed information applicable to accelerate user query processing by detecting containment mappings between query expressions and expressions in the auxiliary structures (page 6, paragraph 0108, lines 2-9);

and means for finding the user query result by executing a rewritten query that exploits the pre-computed information for each detected containment mapping (page 1, paragraph 0015, lines 2-4).

Barton et al. does not teach means for computing compensation for index selection or materialized view matching to determine what portion of said query expressions can be evaluated by said index.

Yalamanchi et al. teaches means for computing compensation for index selection or materialized view matching to determine what portion of said query expressions can be evaluated by said index (Yalamanchi et al., paragraph 0054).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the Barton et al. as modified by teachings of Yalamanchi et al. to include computing compensation for index selection or materialized view matching to determine what portion of said query expressions can be evaluated by said index because it helps increase efficiency and speed of evaluation of query (Yalamanchi et al., paragraph 0054, lines 4-7).

Response to Arguments

10. Applicant's arguments with respect to claims 1, 13, 22, 34, 43, 55 have been considered but are moot in view of the new ground(s) of rejection.

As per Applicants argument to the 101 rejection, the applicant argues with citation from a decision of the Federal Circuit in *AT&T Corp. v. Excel Communications, Inc.* 172 F.3d 1352, 1358, 50 USPQ2d 1447, 1452 (Fed. Cir. 1999). The citation however is directed to a process claim, which the independent claims in the instant applications are not. Therefore the rejection stands valid.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tomasz Ponikiewski whose telephone number is (571)272-1721. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey A. Gaffin can be reached on (571)272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tomasz Ponikiewski
January 22, 2006

Etienne P. Whelan
primary examiner